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PATTERSON & SHERIDAN, LLP / INTERCAT EQUIPMENT
595 SHREWSBURY AVENUE
SUITE 100
SHREWSBURY, NJ 07702

EXAMINER	
BOYER, RANDY	

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1797	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ktaboada@pattersonsheridan.com
PSdocketing@pattersonsheridan.com
tchowdhury@intercatinc.com

Office Action Summary	Application No.	Applicant(s)	
	10/717,249	EVANS, MARTIN	
	Examiner	Art Unit	
	RANDY BOYER	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 January 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Examiner acknowledges Applicant's response filed 24 January 2008 containing amendments to the claims, remarks, and declaration of Mr. Martin Evans.

2. Claims 1-37 are pending.

3. The previous rejections of claims 1-37 under 35 U.S.C. 103(a) are maintained. The rejections follow.

Oath/Declaration

4. Examiner acknowledges the declaration of Mr. Martin Evans filed with Applicant's response on 24 January 2008.

5. Examiner considers the Evans declaration persuasive for the proposition that trucks of the type disclosed in Andon (US 4,082,513) are generally designed for maximum pressures of about 15 psi.

6. Examiner does not consider the Evans declaration persuasive for the propositions that trucks as disclosed in Andon are inoperable to bypass the catalyst storage tank for direct delivery into the fluid catalyst cracking unit (FCCU). Evans bases such argument on the presumption that FCCUs generally operate in the range from about 20 psi to 40 psi, thereby making it impossible to deliver catalyst from the lower-pressure-rated truck (15 psi) to the higher pressure FCCU. Examiner does not consider

this persuasive because several references in the prior art disclose operating ranges for FCCU *below* the expected 15 psi pressure rating of Andon's truck, thereby making it entirely possible to delivery catalyst directly from the truck to the downstream FCCU.[1] Moreover, the direct delivery of catalysts from a truck such as that used in Andon to a reactor unit (e.g., an FCCU) is already known in the art.[2]

7. Examiner does not consider the Evans declaration persuasive for the proposition that costs would be increased because more than one delivery truck would be needed, with each costing in the range of $68,000 - $100,000. First, such argument is not considered persuasive because Examiner does not accept that more than one truck would be needed at any given time. For example, a single catalyst delivery truck would be needed only at the time of loading the catalyst into the FCCU. Once the catalyst is loaded into the FCCU and the FCCU is operational, the catalyst would be expected to be contained within the FCCU, cycling back and forth through the reactor and regenerator. Thereafter, another (second) truck would only be required when the decision was made by the FCCU operator to change or replace catalyst in the FCCU with another (new or different) catalyst. Thus, two trucks would *not* be required at the same time. Second, with respect to the cost of a catalyst delivery truck, such argument is not persuasive because the cost of the trucks would be borne by *the catalyst supplier*

[1] See e.g., Fenske (US 3,893,905), column 3, lines 46-53 (FCC pressures of between 10 and 40 psig in the regenerator); Henke (US 3,860,510), column 30, line 68 – column 31, lines 1-3 (FCC total pressure between 5 and 50 psig); and Harandi (US 5,401,387), column 9, lines 32-37 (pressures ranging from atmospheric to 100 psig).

[2] See e.g., Beech (US 7,223,714), Abstract; column 7, lines 1-12; column 8, lines 41-43; and column 17, lines 29-37 and 51-54.

and *not the FCCU operator* – i.e. the FCCU operator only pays for the load of catalysts being delivered, not the truck used to transport the catalysts to the FCCU facility.

8. Examiner does not consider Evans declaration persuasive for the proposition that Applicant's claims are not obvious in view of the cited prior art (see discussion *infra* at paragraphs 47-51).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 1-6, 9, 18, 21, 22, 25, 36, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andon (US 4,082,513). Alternatively, claims 1-6, 9, 18, 21, 22, 25, 36, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andon (US 4,082,513) in view of Comardo (US 6,132,157).

13. With respect to claim 1, Andon discloses a mobile catalyst injection system comprising: (a) a transportable platform (i.e. bed of a "tank truck" or "tank car") (see Andon, column 2, lines 10-12); (b) a catalyst reservoir (i.e. holding area of the "tank truck" or "tank car") (see Andon, column 2, lines 10-12) coupled to the platform and configured to be coupled to a fluid catalyst cracking storage tank (10); and (c) a flow control device (i.e. reservoir outlet port to be connected to fill valve (28)) coupled to an outlet of the reservoir and adapted to control the flow of catalyst through the outlet directly to the fluid catalyst cracking storage tank (10); wherein the transportable platform, catalyst reservoir, and flow control device comprise a self-contained mobile injection system.

Andon does not disclose wherein the catalyst reservoir is configured to be coupled directly to a fluid catalyst cracking unit.

However, the person having ordinary skill in the art of catalyst injection systems would easily recognize from a complete reading of Andon that one could bypass the

catalyst storage tank (10) of Andon in order to "control the flow of catalyst through the reservoir [i.e. "tank truck" or "tank car"] outlet directly to the fluid catalyst cracking unit," e.g. by delivery of the catalyst from the catalyst reservoir to carrier line (19) and then directly to the fluid catalyst cracking unit (see Andon, drawing).

Moreover, there are several reasons why the person having ordinary skill in the art of catalyst injection systems would be motivated to make such a modification to the system of Andon, for example: (1) to realize a substantial capital cost savings by not having to build additional catalyst storage tanks to hold additional (i.e. different) types of catalysts; (2) to realize additional savings in labor and/or materials by saving plant process operators from having to empty the catalyst storage tank into bulk containers, and clean and flush the catalyst storage tank prior to being filled with a different type of catalyst; and (3) to realize a square-footage savings in plant area by not having to build additional storage tanks to hold additional (i.e. different) types of catalyst – an especially important consideration for older refineries and chemical plants where available plant space to house additional (large) catalyst storage tanks might often be extremely limited.

Finally, the person having ordinary skill in the art of catalyst injection systems would have had a reasonable expectation of success in modifying the system of Andon as described above because all that is involved is a simple bypass of the catalyst storage tank (10) and addition hopper (16) of Andon to deliver catalyst directly from the catalyst reservoir to the carrier line (19) of Andon and then directly to the fluid catalyst cracking unit (see Andon, drawing and accompanying text).

14. Alternatively, with respect to claim 1, Andon discloses a mobile catalyst injection system comprising: (a) a transportable platform (i.e. bed of a "tank truck" or "tank car") (see Andon, column 2, lines 10-12); (b) a catalyst reservoir (i.e. holding area of the "tank truck" or "tank car") (see Andon, column 2, lines 10-12) coupled to the platform and configured to be coupled to a fluid catalyst cracking storage tank; and (c) a flow control device (i.e. reservoir outlet port to be connected to fill valve (28)) coupled to an outlet of the reservoir and adapted to control the flow of catalyst through the outlet directly to the fluid catalyst cracking storage tank (10); wherein the transportable platform, catalyst reservoir, and flow control device comprise a self-contained mobile injection system.

Andon does not disclose wherein the catalyst reservoir is configured to be coupled directly to a fluid catalyst cracking unit.

However, Comardo discloses a mobile catalyst injection system comprising: (a) a transportable platform (184); (b) a catalyst reservoir (202) coupled to the platform and configured to be coupled to a reactor (255); and (c) a flow control device (196, 198) coupled to an outlet of the reservoir and adapted to control the flow of catalyst through the outlet and directly to the reactor (255).

Therefore, from the prior art of catalyst injection systems it is known to have: (1) a transportable platform having a catalyst reservoir coupled thereto and configured to be coupled to a fluid cracking catalyst storage tank (Andon); and (2) a transportable platform having a catalyst reservoir coupled thereto and configured to be coupled to a reactor wherein the flow of catalyst is directed from the catalyst reservoir directly to the reactor (Comardo). Moreover, the person having ordinary skill in the art of catalyst

injection systems could have combined the individual elements of Andon and Comardo to yield the catalyst injection system of Applicant's claim 1 with the results being entirely predictable – i.e. a mobile catalyst injection system being adapted to control the flow of catalyst through an outlet of the platform-coupled catalyst reservoir and directly to a fluid catalyst cracking unit. In this regard, Examiner notes that the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. See *Leapfrog Enterprises Inc. v. Fisher-Price Inc.*, 82 USPQ.2d 1687 (Fed. Cir. 2007) (quoting *KSR International Co. v. Teleflex Inc.*, 82 USPQ.2d 1385, 1389 (U.S. 2007)).

Finally, there are several reasons why the person having ordinary skill in the art of catalyst injection systems would be motivated to make such a modification to the system of Andon, for example: (1) to realize a substantial capital cost savings by not having to build additional catalyst storage tanks to hold additional (i.e. different) types of catalysts; (2) to realize additional savings in labor and/or materials by saving plant process operators from having to empty the catalyst storage tank into bulk containers, and clean and flush the catalyst storage tank prior to being filled with a different type of catalyst; and (3) to realize a square-footage savings in plant area by not having to build additional storage tanks to hold additional (i.e. different) types of catalyst – an especially important consideration for older refineries and chemical plants where available plant space to house additional (large) catalyst storage tanks might often be extremely limited.

15. With respect to claim 2, Andon discloses wherein the platform is a trailer (see Andon, column 2, lines 11-12).

16. With respect to claim 3, Andon discloses wherein the platform is a container (see Andon, column 2, lines 11-12).

17. With respect to claim 4, Andon discloses wherein the platform is a railroad car (see Andon, column 2, lines 11-12).

18. With respect to claims 5 and 6, pallets and barges are known in the art to be substitute means for "trailers," "containers," and "railroad cars" for purposes of transporting material.

19. With respect to claim 9, Andon discloses a pressure control system (see Andon, column 2, lines 51-56) coupled to the platform (see Andon, column 2, lines 11-12). Moreover, Andon discloses wherein a pressure control system (see Andon, drawing and accompanying text) is coupled to the catalyst storage tank (10) for controlling the pressure with the catalyst storage tank (10) and as a means of delivering catalyst to the downstream fluid catalyst cracking unit. Thus, the person having ordinary skill in the art of catalyst injection systems would recognize that such pressure control system could likewise be coupled to the platform and catalyst reservoir as a means of controlling pressure within the catalyst reservoir and delivering catalyst to the downstream fluid catalyst cracking unit.

20. With respect to claims 18 and 22, Andon discloses a mobile catalyst injection system comprising: (a) a trailer or container (i.e. bed of a "tank truck" or "tank car") (see Andon, column 2, lines 10-12); (b) a catalyst reservoir (i.e. holding area of the "tank

truck" or "tank car") (see Andon, column 2, lines 10-12) coupled to the trailer and configured to be coupled to a fluid catalyst cracking storage tank (10); and (c) a flow control device (i.e. reservoir outlet port to be connected to fill valve (28)) coupled to an outlet of the reservoir and adapted to control the flow of catalyst through the outlet directly to the fluid catalyst cracking storage tank (10); wherein the trailer, catalyst reservoir, and flow control device comprise a self-contained mobile injection system.

Andon does not disclose wherein the catalyst injection system comprises a pressure control system coupled to the trailer and the catalyst reservoir; or wherein the catalyst reservoir is configured to be coupled directly to a fluid catalyst cracking unit.

However, Andon discloses a pressure control system (column 2, lines 51-56) coupled to the trailer (column 2, lines 11-12). Moreover, Andon discloses wherein a pressure control system (see Andon, drawing and accompanying text) is coupled to the catalyst storage tank (10) for controlling the pressure with the catalyst storage tank (10) and as a means of delivering catalyst to the downstream fluid catalyst cracking unit. Thus, the person having ordinary skill in the art of catalyst injection systems would recognize that such pressure control system could likewise be coupled to the trailer and catalyst reservoir as a means of controlling pressure within the catalyst reservoir and delivering catalyst to the downstream fluid catalyst cracking unit. Likewise, the person having ordinary skill in the art of catalyst injection systems would easily recognize from a complete reading of Andon that one could bypass the catalyst storage tank (10) of Andon in order to "control the flow of catalyst through the reservoir [i.e. "tank truck" or "tank car"] outlet directly to the fluid catalyst cracking unit," e.g. by delivery of the

catalyst from the catalyst reservoir to carrier line (19) and then directly to the fluid catalyst cracking unit (see Andon, drawing).

Moreover, there are several reasons why the person having ordinary skill in the art of catalyst injection systems would be motivated to make such a modification to the system of Andon, for example: (1) to realize a substantial capital cost savings by not having to build additional catalyst storage tanks to hold additional (i.e. different) types of catalysts; (2) to realize additional savings in labor and/or materials by saving plant process operators from having to empty the catalyst storage tank into bulk containers, and clean and flush the catalyst storage tank prior to being filled with a different type of catalyst; and (3) to realize a square-footage savings in plant area by not having to build additional storage tanks to hold additional (i.e. different) types of catalyst – an especially important consideration for older refineries and chemical plants where available plant space to house additional (large) catalyst storage tanks might often be extremely limited.

Finally, the person having ordinary skill in the art of catalyst injection systems would have had a reasonable expectation of success in modifying the system of Andon as described above because all that is involved is a simple bypass of the catalyst storage tank (10) and addition hopper (16) of Andon to deliver catalyst directly from the catalyst reservoir to the carrier line (19) of Andon and then directly to the fluid catalyst cracking unit (see Andon, drawing and accompanying text).

21. With respect to claims 21 and 25, a mere duplication of parts has no patentable significance unless a new and unexpected result is produced. *See In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

22. With respect to claims 36 and 37, Andon discloses wherein the pressure control system is under automatic (i.e. computer) control (see Andon, entire disclosure).

23. Claims 7, 8, 10-12, 17, and 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erickson (US 4,769,127). Alternatively, claims 7, 8, 10-12, 17, and 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erickson (US 4,769,127) in view of Comardo (US 6,132,157).

24. With respect to claim 7, Erickson discloses a mobile catalyst injection system comprising: (a) a transportable platform (56); (b) a catalyst reservoir (400) coupled to the platform (56) and configured to be coupled to a catalyst storage tank (68); (c) a flow control device (422) coupled to an outlet of the reservoir (400) and adapted to control the flow of catalyst through the outlet; and (d) a generator (i.e. central processing unit providing for automatic control of the system) (see Erickson, column 5, lines 62-68; and column 6, lines 1-2) coupled to the platform (56); wherein the transportable platform, catalyst reservoir, and flow control device comprise a self-contained mobile injection system (see Erickson, Fig. 3).

Erickson does not disclose wherein the catalyst reservoir is configured to be coupled directly to a fluid catalyst cracking unit.

However, Erickson discloses wherein the system may be included as part of a reaction process for the refining (e.g. by way of cracking) of a petroleum feedstock in

the presence of a fresh catalyst (see Erickson, column 3, lines 31-34; and column 6, lines 40-51). In addition, the person having ordinary skill in the art of catalyst injection systems would easily recognize from a complete reading of Erickson that one could modify the system of Erickson in order to "control the flow of catalyst through the reservoir outlet directly to [a] fluid catalyst cracking unit."

Moreover, there are several reasons why the person having ordinary skill in the art of catalyst injection systems would be motivated to make such a modification to the system of Erickson, for example: (1) to realize a substantial capital cost savings by not having to build additional catalyst storage tanks to hold additional (i.e. different) types of catalysts; (2) to realize additional savings in labor and/or materials by saving plant process operators from having to empty the catalyst storage tank into bulk containers, and clean and flush the catalyst storage tank prior to being filled with a different type of catalyst; and (3) to realize a square-footage savings in plant area by not having to build additional storage tanks to hold additional (i.e. different) types of catalyst – an especially important consideration for older refineries and chemical plants where available plant space to house additional (large) catalyst storage tanks might often be extremely limited.

Finally, the person having ordinary skill in the art of catalyst injection systems would have had a reasonable expectation of success in modifying the system of Erickson as described above because all that is involved is the delivery of catalyst directly from the catalyst reservoir (400) to the reactor of Erickson (i.e. without first delivering the catalyst to the catalyst storage tank (68)).

25. Alternatively, with respect to claim 7, Erickson discloses a mobile catalyst injection system comprising: (a) a transportable platform (56); (b) a catalyst reservoir (400) coupled to the platform (56) and configured to be coupled to a catalyst storage tank (68); (c) a flow control device (422) coupled to an outlet of the reservoir (400) and adapted to control the flow of catalyst through the outlet; and (d) a generator (i.e. central processing unit providing for automatic control of the system) (see Erickson, column 5, lines 62-68; and column 6, lines 1-2) coupled to the platform (56); wherein the transportable platform, catalyst reservoir, and flow control device comprise a self-contained mobile injection system (see Erickson, Fig. 3).

Erickson does not disclose wherein the catalyst reservoir is configured to be coupled directly to a fluid catalyst cracking unit.

However, Comardo discloses a mobile catalyst injection system comprising: (a) a transportable platform (184); (b) a catalyst reservoir (202) coupled to the platform and configured to be coupled to a reactor (255); and (c) a flow control device (196, 198) coupled to an outlet of the reservoir and adapted to control the flow of catalyst through the outlet and directly to the reactor (255).

Therefore, from the prior art of catalyst injection systems it is known to have: (1) a transportable platform having a catalyst reservoir coupled thereto and configured to be coupled to a catalyst storage tank (Erickson); and (2) a transportable platform having a catalyst reservoir coupled thereto and configured to be coupled to a reactor wherein the flow of catalyst is directed from the catalyst reservoir directly to the reactor (Comardo). Moreover, the person having ordinary skill in the art of catalyst injection

systems could have combined the individual elements of Erickson and Comardo to yield the catalyst injection system of Applicant's claim 7 with the results being entirely predictable – i.e. a mobile catalyst injection system being adapted to control the flow of catalyst through an outlet of the platform-coupled catalyst reservoir and directly to a fluid catalyst cracking unit. In this regard, Examiner notes that the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. See *Leapfrog Enterprises Inc. v. Fisher-Price Inc.*, 82 USPQ.2d 1687 (Fed. Cir. 2007) (quoting *KSR International Co. v. Teleflex Inc.*, 82 USPQ.2d 1385, 1389 (U.S. 2007)).

Finally, there are several reasons why the person having ordinary skill in the art of catalyst injection systems would be motivated to make such a modification to the system of Erickson, for example: (1) to realize a substantial capital cost savings by not having to build additional catalyst storage tanks to hold additional (i.e. different) types of catalysts; (2) to realize additional savings in labor and/or materials by saving plant process operators from having to empty the catalyst storage tank into bulk containers, and clean and flush the catalyst storage tank prior to being filled with a different type of catalyst; and (3) to realize a square-footage savings in plant area by not having to build additional storage tanks to hold additional (i.e. different) types of catalyst – an especially important consideration for older refineries and chemical plants where available plant space to house additional (large) catalyst storage tanks might often be extremely limited.

26. With respect to claim 8, Erickson discloses a controller coupled to the platform and flow control device for controlling the catalyst dispensed from the catalyst reservoir (see Erickson, column 20, lines 56-68; and column 21, lines 1-9).

27. With respect to claim 10, Erickson discloses wherein the catalyst reservoir is movable relative to the platform (see Erickson, column 6, lines 7-9; and Fig. 3).

28. With respect to claims 11 and 12, Erickson discloses a plurality of load cells disposed between the catalyst reservoir and platform, as well as a sensor adapted to detect a metric indicative of catalyst dispensed from the catalyst reservoir (see Erickson, column 5, lines 46-56).

29. With respect to claim 17, Erickson discloses a mobile catalyst injection system further comprising a second catalyst reservoir coupled to the platform and adapted to be coupled to the fluid catalyst cracking unit (see Erickson, Fig. 3) (showing a second catalyst reservoir above catalyst storage tank (70)).

30. With respect to claim 26, Erickson discloses a method for process control in a resid hydrotreating unit comprising: (a) processing oil in a treating system having one or more hard piped catalytic injection systems; (b) transporting a self contained mobile catalyst injection system to the treating system; (c) directly coupling the mobile catalyst injection to the treating system; and (d) injecting catalyst from the mobile catalyst injection into the treating system (see Erickson, Fig. 3).

Erickson does not disclose use of such a method for process control in a fluid catalytic cracking system.

However, Erickson discloses that his process can be carried out with many types of equipment, including as part of a reactor system that refines a petroleum feedstock in the presence of a fresh catalyst (see Erickson, column 3, lines 31-34; and column 6, lines 40-51).

Therefore, the person having ordinary skill in the art of catalyst injection systems at the time the invention was made would have been motivated to integrate the process of Erickson into a fluid catalytic cracking system in order to provide an improved means of catalyst handling.

Finally, the person having ordinary skill in the art of catalyst injection systems would have had a reasonable expectation of success in integrating the process of Erickson into a fluid catalytic cracking system because Erickson discloses the use of his process with many different types of catalyst systems (see Erickson, column 6, lines 40-51).

31. With respect to claim 27, Erickson discloses transporting a mobile catalyst injection by way of rail or truck (see Erickson, column 2, 36-39).

32. With respect to claims 28-30, Erickson discloses the electronic sensing and monitoring of the type and amount of catalyst being dispensed into the treating system (see Erickson, column 2, lines 31-35).

33. Claims 13-16, 31, 32, 34, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erickson (US 4,769,127) in view of Haugen (US 2,616,591).

34. With respect to claim 13, Erickson discloses a mobile catalyst injection system comprising: (a) a transportable platform (56); (b) a catalyst reservoir (400) coupled to

the platform (56) and configured to be coupled to a catalyst storage tank (68); (c) a flow control device (422) coupled to an outlet of the reservoir (400) and adapted to control the flow of catalyst through the outlet; wherein the transportable platform, catalyst reservoir, and flow control device comprise a self-contained mobile injection system (see Erickson, Fig. 3).

Erickson does not disclose wherein the catalyst reservoir is configured to be coupled directly to a fluid catalyst cracking unit; or wherein the catalyst reservoir further comprises a plurality of compartments and a plenum disposed in the catalyst reservoir coupling the compartments.

However, Erickson discloses wherein the system may be included as part of a reaction process for the refining (e.g. by way of cracking) of a petroleum feedstock in the presence of a fresh catalyst (see Erickson, column 3, lines 31-34; and column 6, lines 40-51). In addition, the person having ordinary skill in the art of catalyst injection systems would easily recognize from a complete reading of Erickson that one could modify the system of Erickson in order to "control the flow of catalyst through the reservoir outlet directly to [a] fluid catalyst cracking unit." Furthermore, Haugen discloses a dispensing device comprising a plurality of compartments (12, 13) and a plenum (17) disposed in the device and coupling the compartments. Haugen explains that the plurality of measuring devices (i.e. compartments) of his invention provides for a substantial time savings of delivering material by eliminating the need for separate measuring devices for separate ingredients (see Haugen, column 1, lines 10-16).

Moreover, there are several reasons why the person having ordinary skill in the art of catalyst injection systems would be motivated to make such a modification to the system of Erickson, for example: (1) to realize a substantial capital cost savings by not having to build additional catalyst storage tanks to hold additional (i.e. different) types of catalysts; (2) to realize additional savings in labor and/or materials by saving plant process operators from having to empty the catalyst storage tank into bulk containers, and clean and flush the catalyst storage tank prior to being filled with a different type of catalyst; (3) to realize a square-footage savings in plant area by not having to build additional storage tanks to hold additional (i.e. different) types of catalyst – an especially important consideration for older refineries and chemical plants where available plant space to house additional (large) catalyst storage tanks might often be extremely limited; and (4) to eliminate the need for two catalyst reservoirs to deliver two types of catalyst.

Finally, the person having ordinary skill in the art of catalyst injection systems would have had a reasonable expectation of success in modifying the system of Erickson as described above because (1) all that is involved is the delivery of catalyst directly from the catalyst reservoir (400) to the reactor of Erickson (i.e. without first delivering the catalyst to the catalyst storage tank (68)); and (2) both Erickson and Haugen are concerned with the handling and delivery of solid material.

35. With respect to claims 14, Haugen provides a dispensing device having two compartments substantially equal in volume (see Haugen, Figures 1 and 5).

36. With respect to claims 15, 16, and 32 Haugen does not contemplate the use of compartments of different sizes. However, the court has held that where the only difference between the prior art and the claims at issue is a recitation of relative dimensions of the claimed device, and a device having the claimed relative dimensions would not perform differently than the prior art device, then the claimed device is not patentably distinct from the prior art device. *See Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 830, 225 USPQ 232 (1984).

37. With respect to claim 31, Haugen discloses storing material in a first compartment of a dispensing device and storing material in a second compartment of a dispensing device (see Haugen, Figures 1 and 5).

38. With respect to claim 34, Haugen discloses dispensing material simultaneously from two different compartments (see Haugen, column 1, lines 19-21).

39. With respect to claim 35, it has been held that the selection of any order of mixing ingredients is *prima facie* obvious. *See In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930).

40. Claims 19-21, 23-25, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andon (US 4,082,513) in view of Haugen (US 2,616,591).

41. With respect to claim 19, Andon discloses a mobile catalyst injection system comprising: (a) a trailer or container (i.e. bed of a "tank truck" or "tank car") (see Andon, column 2, lines 10-12); (b) a catalyst reservoir (i.e. holding area of the "tank truck" or "tank car") (see Andon, column 2, lines 10-12) coupled to the trailer and configured to

be coupled to a fluid catalyst cracking storage tank (10); and (c) a flow control device (i.e. reservoir outlet port to be connected to fill valve (28)) coupled to an outlet of the reservoir and adapted to control the flow of catalyst through the outlet directly to the fluid catalyst cracking storage tank (10); wherein the trailer, catalyst reservoir, and flow control device comprise a self-contained mobile injection system.

Andon does not disclose wherein the catalyst injection system comprises a pressure control system coupled to the trailer and the catalyst reservoir; wherein the catalyst reservoir is configured to be coupled directly to a fluid catalyst cracking unit; and wherein a plurality of compartments and a plenum are disposed in the catalyst reservoir and coupling the compartments.

However, Andon discloses a pressure control system (column 2, lines 51-56) coupled to the trailer (see Andon, column 2, lines 11-12). Moreover, Andon discloses wherein a pressure control system (see Andon, drawing and accompanying text) is coupled to the catalyst storage tank (10) for controlling the pressure with the catalyst storage tank (10) and as a means of delivering catalyst to the downstream fluid catalyst cracking unit. Thus, the person having ordinary skill in the art of catalyst injection systems would recognize that such pressure control system could likewise be coupled to the trailer and catalyst reservoir as a means of controlling pressure within the catalyst reservoir and delivering catalyst to the downstream fluid catalyst cracking unit. Likewise, the person having ordinary skill in the art of catalyst injection systems would easily recognize from a complete reading of Andon that one could bypass the catalyst storage tank (10) of Andon in order to "control the flow of catalyst through the reservoir

[i.e. "tank truck" or "tank car"] outlet directly to the fluid catalyst cracking unit," e.g. by delivery of the catalyst from the catalyst reservoir to carrier line (19) and then directly to the fluid catalyst cracking unit (see Andon, drawing). In addition, Haugen discloses a dispensing device comprising a plurality of compartments (12, 13) and a plenum (17) disposed in the device and coupling the compartments. Haugen explains that the plurality of measuring devices (i.e. compartments) of his invention provides for a substantial time savings of delivering material by eliminating the need for separate measuring devices for separate ingredients (see Haugen, column 1, lines 10-16).

Moreover, there are several reasons why the person having ordinary skill in the art of catalyst injection systems would be motivated to make such a modification to the system of Andon, for example: (1) to realize a substantial capital cost savings by not having to build additional catalyst storage tanks to hold additional (i.e. different) types of catalysts; (2) to realize additional savings in labor and/or materials by saving plant process operators from having to empty the catalyst storage tank into bulk containers, and clean and flush the catalyst storage tank prior to being filled with a different type of catalyst; (3) to realize a square-footage savings in plant area by not having to build additional storage tanks to hold additional (i.e. different) types of catalyst – an especially important consideration for older refineries and chemical plants where available plant space to house additional (large) catalyst storage tanks might often be extremely limited; and (4) to eliminate the need for two catalyst reservoirs to deliver two types of catalyst.

Finally, the person having ordinary skill in the art of catalyst injection systems would have had a reasonable expectation of success in modifying the system of Andon as described above because: (1) all that is involved is a simple bypass of the catalyst storage tank (10) and addition hopper (16) of Andon to deliver catalyst directly from the catalyst reservoir to the carrier line (19) of Andon and then directly to the fluid catalyst cracking unit (see Andon, drawing and accompanying text); and (2) both Andon and Haugen are concerned with the handling and delivery of solid material.

42. With respect to claims 20 and 24, Haugen does not contemplate the use of compartments of different sizes. However, the court has held that where the only difference between the prior art and the claims at issue is a recitation of relative dimensions of the claimed device, and a device having the claimed relative dimensions would not perform differently than the prior art device, then the claimed device is not patentably distinct from the prior art device. *See Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 830, 225 USPQ 232 (1984).

43. With respect to claims 21 and 25, a mere duplication of parts has no patentable significance unless a new and unexpected result is produced. *See In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

44. With respect to claim 23, Haugen discloses a dispensing device having a plurality of compartments and a plenum disposed in the device and coupling the compartments (see Haugen, Figures 1 and 5).

45. With respect to claim 33, Andon discloses pressurizing the catalyst storage tank (10) for the delivery of catalyst to the fluid catalyst cracking unit (see Andon, column 2, lines 53-56).

Response to Arguments

46. Examiner understands Applicant's principal arguments to be:

I. The person having ordinary skill in the art would not be motivated to modify the process of Andon by bypassing the catalyst storage tank because doing so would increase capital cost, labor, and square footage requirements.

II. Andon is incapable of discharging catalyst from a lower pressure environment (catalyst delivery truck) to a higher pressure system such as an FCCU. Thus, Andon is inoperable to bypass the catalyst storage tank.

III. Comardo fails to disclose an injection system for FCC unit and does not disclose a reactor of an FCCU.

IV. The container (400) of Erickson fails to have the physical characteristics required to enable direct injection of catalyst from the container (400) to the FCCU.

V. Erickson's catalyst silos are neither mobile nor configured to be coupled to an FCCU, nor is the transport container of Erickson an injection system because it fails to have the physical characteristics required to enable the direct injection of catalyst from the container (400) to the FCCU.

VI. Haugen fails to disclose a vessel configured to deliver a catalyst to an FCCU.

VII. Haugen fails to disclose and/or teaches away from a plurality of compartments.

47. With respect to Applicant's first and second arguments, see discussion *supra* at paragraphs 4-8.

48. With respect to Applicant's third and sixth arguments, such arguments are not persuasive because one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

49. With respect to Applicant's fourth argument, see discussion *supra* at paragraph 24.

50. With respect to Applicant's fifth argument, Examiner notes that Applicant's claims have been drafted to provide "wherein the transportable platform, catalyst reservoir, and flow control device comprise a self contained mobile injection system." In this regard, Erickson discloses a mobile catalyst injection system comprising: (a) a transportable platform (56); (b) a catalyst reservoir (400) coupled to the platform (56) and configured to be coupled to a catalyst storage tank (68); (c) a flow control device (422) coupled to an outlet of the reservoir (400) and adapted to control the flow of catalyst through the outlet; and (d) a generator (i.e. central processing unit providing for automatic control of the system) (see Erickson, column 5, lines 62-68; and column 6, lines 1-2) coupled to the platform (56); wherein the transportable platform, catalyst reservoir, and flow control device comprise a self-contained mobile injection system (see Erickson, Fig. 3).

51. With respect to Applicant's seventh argument, Haugen clearly discloses a vessel having a plurality of compartments (see Haugen, Fig. 1) (showing individual hoppers (12, 13) divided by a partition (18)).

Conclusion

52. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

53. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Randy Boyer whose telephone number is (571) 272-7113. The examiner can normally be reached Monday through Friday from 8:00 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola, can be reached at (571) 272-1444. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RPB

/Glenn A Caldarola/

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